

ABSTRACT

A process for removing silica from nonwood plant materials involving both chemical and mechanical action is described. The silica-rich epidermal cells are liberated mechanically by a pre-pulping and low-consistency refining step and subsequently removed from the pulp via the filtrate of a thickening step. Amorphous silica is liberated chemically by using an alkaline dilution source in the pulper, then removed from the pulp via the filtrate of a thickening step and a dewatering step. The silica is then removed from the filtrate by adjusting the pH, followed by a separation step. The desilicated fibrous material may then be chemically or mechanically pulped and bleached using known processes. The silica removed from the nonwood plant material may then be used as a feedstock for other applications.